

DOCKET NO: 283229US41PCT

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF :
HIROYUKI OCHIAI, ET AL. : EXAMINER: HORNIG, JOEL G.
SERIAL NO: 10/560,173 :
FILED: OCTOBER 6, 2006 : GROUP ART UNIT: 1712
FOR: TURBINE COMPONENT, GAS :
TURBINE ENGINE, METHOD FOR
MANUFACTURING TURBINE
COMPONENT, SURFACE PROCESSING
METHOD, VANE COMPONENT, METAL
COMPONENT, AND STEAM TURBINE
ENGINE

DECLARATION OF HIROYUKI OCHIAI
UNDER 37 C.F.R. § 1.132

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

Sir:

1. I, Hiroyuki OCHIAI, as an expert in electric spark machining, one of the inventors and a representative of all the inventors, give the following comments. My Curriculum Vitae showing my expertise is attached.

2. With the help of Mr. Kawachi's comments in his Declaration, I respectfully assert that the electric spark machine as claimed is clearly different from the Koizumi device.

3. One reason is that an electric spark machine uses intermittent pulse current to generate pulsing electric discharges. By way of contrast, the Koizumi device uses a direct current power supply to supply a continuous direct current to an electrode. Please see our specification which describes and teaches generation of pulsing electric discharges. In contrast, continuous direct current in general does not cause generation of pulsing

electric discharges. Rather it causes a steady discharge. This presents a clear contrast between the claimed electric spark machine and the Koizumi device.

4. Another reason is that the current flow level of electric spark machining in the process is far lower than that in the Koizumi process. In an electric spark machine, peak current applied to a workpiece is not greater than several tens of amperes and the average current is still smaller than that because current flows only at limited periods of a pulse width of several hundreds of a microsecond. Thus, injected energy is far less than that utilized by Koizumi, thereby reducing thermal damage on the subject body.

5. An additional reason is that operation of electric spark machining is not manual but should be properly servo-controlled. A servo system is installed in an electric spark machine and is used to keep a properly narrow gap between an electrode and a subject body. The claimed subject matter and the Koizumi device show a distinct contrast between electric spark machining and manual arc welding.

6. I hereby declare that all the statements made herein of own knowledge are true, and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and the such willful false statements may jeopardize the validity of my patent application as originally filed and/or any patents to be issued and/or to be granted thereon.

Hiroyuki Ochiai
Signature: Hiroyuki Ochiai

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June 17, 2011

Date

Curriculum Vitae

1970 Graduated as bachelorship from Tokyo Institute of Technology,; the mechanical engineering, department of science and engineering

Present Post Technical Advisor, Aero-Engine & Space Operations, IHI Corporations

1970 Entered IHI, and was staffed to Machine Shop at Tanashi Plant

1972 Transferred to Production Engineering Department, responsible for rotation part

1975 Assigned to be responsible for Blade and Vane

1987 Advanced to Section Manager at Numerical Control Program Team

1993 Transferred to Engineering Group, Production Planning, Production Center

1994 Advanced to Department Manager of Production Control and Production Engineering Department at Kure No2 Plant, responsible for long shaft, large disk, and large fabricated casing and frame

1995 Transferred to Engineering Group, Production Planning, Production Center

1999 Advanced to Chief engineer at Production Center

2007 Advanced to Technical Advisor in Aero-Engine & Space Operations

Honor

1983 Highest Prize of improvement proposal for the year in Aero-Engine & Space Operations

1998 Excellent Invention Award for the year at IHI

2007 Award for actual achievement in intellectual property

Highest Performance Awards in Aero-Engine & Space Operations

Prize from Japan Defense Procurement Structure Improvement Foundation

Notes

Numeric quantity of application for patent in Japan: 148

Signed by,

Date: June 17, 2011



Name: Hiroyuki Ochiai

Title: Technical Adviser

Aero-Engine & Space Operations

IHI Corporation